

DaimlerChrysler AG

Dr. Kaufmann

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Patent Claims

- 5 1. Vehicle having a transmission (2) for transmitting
a torque from a drive machine (1) to drive wheels,
with the transmission (2) having a transmission
output shaft (5) and a transmission input shaft
10 (4), in which the torque can be transmitted from
the drive machine (1) to the transmission output
shaft (5), and having an electrical machine (3)
which has a rotor (32) and a stator (31),
characterized
in that means (34, 7, 8, 9, 10, 20, 50, 56, 57,
15 58) are provided in order to connect the electric-
motor torque of the first electrical machine (3)
optionally to the transmission input shaft (3) or
to the transmission output shaft (5).
- 20 2. Vehicle according to Claim 1,
characterized
in that the transmission (2) is a manual
transmission.
- 25 3. Vehicle according to Claim 2,
characterized
in that an additional intermediate shaft (7) is
provided in the manual transmission (2) and
interacts with the layshaft (6) of the manual
30 transmission (2), with at least one first or
second gearwheel (11, 21) on the layshaft (6)
being operatively connected to at least one
associated first or second gearwheel (10, 20) on
the additional intermediate shaft (7).
- 35 4. Vehicle according to Claim 2,

characterized

in that the additional intermediate shaft (7) is connected to the rotor (32) of the first electrical machine (3) and can be driven by the rotor (32).

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5. Vehicle according to Claim 2, characterized

in that a first gear-changing and synchronization means (8) is associated with the additional intermediate shaft (7) which synchronizes the two gearwheels (10, 11) and operatively connects the first gearwheel (10) to the first gearwheel (11) on the layshaft (6) in order to transmit the electric-motor torque of the first electrical machine (3) from the additional intermediate shaft (7) to the transmission input shaft (4).

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6. Vehicle according to Claim 2, characterized

in that a second gear-changing and synchronization means (9) is associated with the additional intermediate shaft (7) which synchronizes the two gearwheels (20, 21) and operatively connects the second gearwheel (20) to the second gearwheel (21) on the layshaft (6) in order to transmit the electric-motor torque of the first electrical machine (3) from the additional intermediate shaft (7) to the transmission output shaft (4).

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7. Vehicle according to Claim 2, characterized

in that the rotor (32) of the first electrical machine (3) is connected to a rotor holder (35) which is connected in a rotationally fixed manner to a third gearwheel (33) which is operatively connected to a fourth gearwheel (34), which is

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connected in a rotationally fixed manner to the additional intermediate shaft (7).

8. Vehicle according to Claim 1,
5 characterized
in that a gear-changing and synchronization means (50) and the first electrical machine (3) are arranged such that they intersect at least partially in the axial direction.
- 10 9. Vehicle according to Claim 8,
characterized
in that the first electrical machine (3) can be
connected via the gear-changing and
15 synchronization means (50) at least to the
transmission input shaft (4).
10. Vehicle according to Claim 8 or 9,
characterized
20 in that the sliding collar (51) of the gear-
changing and synchronization means (50) can be
driven via the first electrical machine (3).
11. Vehicle according to Claim 3,
25 characterized
in that a pair of gearwheels (52) are arranged
such that they at least partially intersect in the
axial direction in order to transmit a torque
between the first electrical machine (3) and the
30 additional intermediate shaft (7) and the first
electrical machine (3).
12. Vehicle according to Claim 1,
characterized
35 in that the transmission (2) is an automatic
transmission, in which case the torque of the
first electrical machine (3) can be switched
backwards and forwards between the transmission

input shaft (3) and the transmission output shaft (5) by means of epicyclic gearing.

13. Vehicle according to Claim 1,
5 characterized
in that the first electrical machine (3) is
arranged between the drive engine (1) and the
transmission bellhousing (40).
- 10 14. Vehicle according to Claim 1,
characterized
in that the first electrical machine (3) is
arranged inside the transmission bellhousing (40).
- 15 15. Vehicle according to Claim 1,
characterized
in that the transmission (2) is arranged between
the drive machine (1) and the first electrical
machine (3).
- 20 16. Vehicle according to Claim 1,
characterized
in that the first electrical machine (3) is
intended for use as a starter/generator when the
25 first gearwheel on the additional intermediate
shaft (7) interacts with the first gearwheel (11)
on the layshaft (6), and is intended for use as a
further drive machine when the second gearwheel
(20) on the additional intermediate shaft (7)
30 interacts with the second gearwheel (21) on the
layshaft (21).
17. Vehicle according to Claim 1,
characterized
35 in that at least one second electrical machine
(53) is provided, in addition to the first
electrical machine (3), at least for transmitting

a torque to an output shaft (54) of the drive machine (1).

18. Vehicle according to Claim 17,
5 characterized
in that at least a part of the second electrical machine (53) is firmly connected to the output shaft (54) of the drive machine (1), and forms at least a part of a flywheel mass for the drive
10 machine (1).
19. Vehicle according to Claim 17 or 18,
characterized
in that the second electrical machine (53) and a
15 clutch (41) for the transmission (2) are arranged such that they at least partially intersect in the axial direction.